

the Focus of the incident Rays, the point q shall be the Focus of the reflected ones.

Fig. 6. *Cas. 3.* Let ACB be the refracting Surface of any Sphere whose Center is E . In any Radius thereof EC produced both ways take ET and Ct severally in such Proportion to that Radius as the lesser of the Sines of Incidence and Refraction hath to the difference of those Sines. And then if in the same Line you find any two Points Q and q , so that TQ be to ET as Et to tq , taking tq the contrary way from t which TQ lieth from T , and if the Point Q be the Focus of any incident Rays, the Point q shall be the Focus of the refracted ones.

And by the same means the Focus of the Rays after two or more Reflexions or Refractions may be found.

Fig. 7. *Cas. 4.* Let $ACBD$ be any refracting Lens, spherically Convex or Concave or Plane on either side, and let CD be its Axis (that is the Line which cuts both its Surfaces perpendicularly, and passes through the Centers of the Spheres,) and in this Axis let F and f be the Foci of the refracted Rays found as above, when the incident Rays on both sides the Lens are Parallel to the same Axis; and upon the Diameter Ff bisected in E , describe a Circle. Suppose now that any Point Q be the Focus of any incident Rays. Draw QE cutting the said Circle in T and t , and therein take tq in such Proportion to tE as tE or TE hath to TQ . Let tq lye the contrary way from t which TQ doth from T , and q shall be the Focus of the refracted Rays without any sensible Error, provided the Point Q be not so remote from the Axis, nor the Lens so broad as to make any of the Rays fall too obliquely on the refracting Surfaces.

And by the like Operations may the reflecting or refracting Surfaces be found when the two Foci are given, and

and thereby a Lens be formed, which shall make the Rays flow towards or from what place you please.

So then the meaning of this Axiom is, that if Rays fall upon any Plane or Spherical Surface or Lens, and before their Incidence flow from or towards any Point Q , they shall after Reflexion or Refraction flow from or towards the Point q found by the foregoing Rules. And if the incident Rays flow from or towards several points Q , the reflected or refracted Rays shall flow from or towards so many other Points q found by the same Rules. Whether the reflected and refracted Rays flow from or towards the Point q is easily known by the situation of that Point. For if that Point be on the same side of the reflecting or refracting Surface or Lens with the Point Q , and the incident Rays flow from the Point Q , the reflected flow towards the Point q and the refracted from it; and if the incident Rays flow towards Q , the reflected flow from q , and the refracted towards it. And the contrary happens when q is on the other side of that Surface.

A X. VII.

Wherever the Rays which come from all the Points of any Object meet again in so many Points after they have been made to converge by Reflexion or Refraction, there they will make a Picture of the Object upon any white Body on which they fall.

So if PR represent any Object without Doors, and AB Fig. 3. be a Lens placed at a hole in the Window-shut of a dark Chamber, whereby the Rays that come from any Point Q of that Object are made to converge and meet again in the Point q ; and if a Sheet of white Paper be held at q for the Light there to fall upon it: the Picture of that Object PR will appear upon the Paper in its proper Shape and